Humber Wastewater Treatment Plant Odour Control Plant Process Upgrades

CLIENT City of Toronto

LOCATION Toronto, Ontario

Project Description

The Humber Wastewater Treatment Plant (WWTP) is Toronto's second largest facility of its kind. It is located along The Queensway in Toronto's west end, near the mouth of the Humber River. The Humber WWTP works to treat used water that residents and businesses deposit down the drains every day. Flushing toilets, taking a shower and running a washing machine, for example, produces wastewater. This water travels through the sanitary sewer system, a network of underground pipes, to treatment facilities.

Black & McDonald was the building odour control contractor during the construction of two new biofilters (central and south biofilter) to treat air from the plant. Work comprised of replacement of two raw sewage screens, new screening conveying systems, odour control ductwork, automated grit removal process, supply of exhaust fans, air handling units, and improvements to grit vortex separators, to be performed with the plant fully operational.

B&M Scope of Work

The scope of work includes:

- Removal of existing air handling units, ductwork and supports, temporary odour control ducting, dampers, fans, and louvres
- Off-loading and installation of odour control unit, media, plenum and fans
- Odour control fans, flexible connections, and sound enclosures
- Custom-made air handling units
- Air conditioning units and insulated refrigerant piping
- Stainless steel ductwork for supply and exhaust, acoustic lining, dampers, supports, test ports, vents, access, etc.
- Duct-mounted reheat coils installation
- Temporary odour control exhaust ventilation
- FRP ductwork and accessories
- Supply and installation of fans
- Automatic controls

Humber Wastewater Treatment Plant Odour Control Plant Process Upgrades

Humber WWTP Odour Control Plant & Process Upgrades involves significant refurbishment of complex mechanical systems. An example of this is the removal of building general exhaust, odour control exhaust, existing AHUs complete with ducting, and vestibule pressurization fans. Black & McDonald introduced new AHUs and odour control ducting complete with coordinated interference layout of existing and new services.

Benefits to Client or Problem(s) Solved

Because this is an active operating facility, the new equipment and odour control systems installed were phased in while the facility was operating. Black & McDonald maintained air changes within the buildings while phasing out an old ventilation system and introducing new supply and odour control exhaust systems.

Black & McDonald successfully managed complex schedules involving multiple sub-trades including controls, air conditioning and refrigeration piping. Because of the ongoing operations of the plant, Black & McDonald produced a phasing schedule to coordinate with general contractor's three staged phasing plan. This created a smooth and seamless integration.

This project has multiple complex work sequencings. The plant is to be fully operational and functioning under the City of Toronto's requirements during the installation of new design. For example, the loading bay installations required extensive coordination with other stakeholders including the city and the general contractor.

Innovative Process or Technology Used

This project is a process retrofit within the existing grit building, loading bay, and head house. Black & McDonald's use of CAD anticipated that there would be problems. We were able to flag any issues and coordinate with the stakeholders to maintain plant operations. An example of this is the coordination, design and installation of all new ventilation systems with interference/installation drawings. We also installed the system in such a way so as to not interfere with existing service cranes and serviceable equipment. All installations of ducting and air handling equipment were to be tested and commissioned for city training and final operation.